SECTION 22 40 00
PLUMBING FIXTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Plumbing fixtures, associated trim and fittings necessary to make a complete installation from wall or floor connections to rough piping, and certain accessories.

1.2 RELATED WORK

A. Sealing between fixtures and other finish surfaces: Section 07 92 00, JOINT SEALANTS.

B. Through bolts: Section 10 21 13, TOILET COMPARTMENTS.

C. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submit plumbing fixture information in an assembled brochure, showing cuts and full detailed description of each fixture.

1.4 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standard Institute (ANSI):
The American Society of Mechanical Engineers (ASME):

A112.6.1M-02(R2008).....	Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use
A112.19.1M-08	Enameled Cast Iron Plumbing Fixtures
A112.19.2M-03	Vitreous China Plumbing Fixtures
A112.19.3-2001(R2008).....	Stainless Steel Plumbing Fixtures (Designed for Residential Use)

C. American Society for Testing and Materials (ASTM):

A276-2010	Stainless and Heat-Resisting Steel Bars and Shapes
WW-P-541-E/GEN	Plumbing Fixtures with Amendment 1

D. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM AMP 500-505 Metal Finishes Manual (1988)

E. American Society of Sanitary Engineers (ASSE):

1016-05	Performance Requirements for Individual Thermostatic, Pressure Balancing and Combination Pressure Balancing and Thermostatic Control Valves for Individual Fixture Fittings

F. National Sanitation Foundation (NSF)/American National Standards Institute (ANSI):

61-2009 ..... Drinking Water System Components-Health Effects

G. American with Disabilities Act (A.D.A) Section 4-19.4 Exposed Pipes and Surfaces
H. Environmental Protection Agency EPA PL 93-523 1974; A 1999) Safe Drinking Water Act.
I. International Building Code, ICC IPBC 2009.

PART 2 - PRODUCTS

2.1 STAINLESS STEEL

A. Corrosion-resistant Steel (CRS):
   1. Plate, Sheet and Strip: CRS flat products shall conform to chemical composition requirements of any 300 series steel specified in ASTM A276.
   2. Finish: Exposed surfaces shall have standard polish (ground and polished) equal to NAAMM finish Number 4.
B. Die-cast zinc alloy products are prohibited.

2.2 STOPS

A. Provide 1/4 turn “ball type” loose key or screw driver pattern angle stops, straight stops or stops integral with faucet, with each compression type faucet whether specifically called for or not, including sinks in wood and metal casework. Locate stops centrally above or below fixture in accessible location.
B. Furnish keys for lock shield stops to COTR.
C. Supply from stops not integral with faucet shall be chrome plated copper flexible tubing or flexible stainless steel with inner core of non-toxic polymer.
D. Supply pipe from wall to valve stop shall be rigid threaded IPS copper alloy pipe, i.e. red brass pipe nipple, chrome plated where exposed.

2.3 ESCUTCHEONS

A. Heavy type, chrome plated, with set screws. Provide for piping serving plumbing fixtures and at each wall, ceiling and floor penetrations in exposed finished locations and within cabinets and millwork.

2.4 LAMINAR FLOW CONTROL DEVICE

A. Smooth, bright stainless steel or satin finish, chrome plated metal laminar flow device shall provide non-aeration, clear, coherent laminar flow that will not splash in basin. Device shall also have a flow control restrictor and have vandal resistant housing.
B. Flow Control Restrictor:
   1. Capable of restricting flow from 95 ml/s to 110 ml/s (0.5 gpm) for lavatories.
   2. Compensates for pressure fluctuation maintaining flow rate specified above within 10 percent between 170 kPa and 550 kPa (25 psi and 80 psi).
   3. Operates by expansion and contraction, eliminates mineral/sediment build-up with self-cleaning action, and is capable of easy manual cleaning.

2.5 CARRIERS

A. ASME/ANSI A112.6.1M, with adjustable gasket faceplate chair carriers for wall hung closets with auxiliary anchor foot assembly, hanger rod support feet, and rear anchor tie down.

B. ASME/ANSI A112.6.1M, lavatory, chair carrier for thin wall construction. All lavatory chair carriers shall be capable of supporting the lavatory with a 250-pound vertical load applied at the front of the fixture.

C. Where water closets, lavatories or sinks are installed back-to-back and carriers are specified, provide one carrier to serve both fixtures in lieu of individual carriers. The drainage fitting of the back to back carrier shall be so constructed that it prevents the discharge from one fixture from flowing into the opposite fixture.

2.6 WATER CLOSETS

A. (P-103) Water Closet (Wall Hung, ASME/ANSI A112.19.2M, Figure 9) office and industrial, elongated bowl, siphon jet 6 L (1.28 gallons) per flush, wall outlet. Top of rim for handicapped water closet shall have rim set 457 mm (18 inches) above finished floor.

1. Seat: Institutional/Industrial, extra heavy duty, chemical resistant, solid plastic, open front less cover for elongated bowls, integrally molded bumpers, concealed check hinge with stainless steel post. Seat shall be posture contoured body design. Color shall be white.
2. Fittings and Accessories: Gaskets - neoprene; bolts with chromium plated caps nuts and washers.
3. Flush valve: Large chloramines resistant diaphragm, semi-red brass valve body, exposed chrome plated, hard wired active infra-red sensor for automatic operation with courtesy flush button for manual operation water saver design 4.85 L (1.28 gallons) per flush with maximum 10 percent variance 25 mm (1 inch) screwdriver back check angle stop with vandal resistant cap, adjustable tailpiece, a high back pressure vacuum breaker, spud coupling for 38 mm (1 1/2 inches) top spud, wall and spud flanges, and sweat solder adapter with cover tube and set screw wall flange. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM alloy classification for semi-red brass. Seat bumpers shall be integral part of flush valve. Set centerline of inlet 292 mm (11-1/2 inches) above rim. 120V-1PH power will be located in a wiring box above the ceiling by the Electrical Contractor. A 0.75” conduit (for low voltage wiring) stubbed above the ceiling and extending down to an electrical wall box located behind each water closet will be provided by the Electrical Contractor. All transformers and all low voltage wiring shall be by the Plumbing Contractor. The Plumbing Contractor shall coordinate all work with the Electrical Contractor and the General Contractor.

B. (P-107) Water Closet (Wall Hung, ASME/ANSI A112.19.2M, Figure 9) elongated bowl, 356 mm (14 inches) maximum overall width, siphon jet, wall outlet, top spud, flush valve operated 4.85 L (1.28 gallons per flush). Top of rim shall be 406 mm (16 inches) above finished floor.

1. Seat: Institutional/Industrial, extra heavy duty, chemical resistant, solid plastic, open front less cover for elongated bowls, integrally molded bumpers, concealed check hinge with stainless steel post. Seat shall be posture contoured body design. Color shall be white.
2. Fittings and Accessories: Gaskets - neoprene; bolts with chrome plated cap nuts and washers.
3. Flush valve: Large chloramines resistant diaphragm, semi-red brass valve body, exposed chrome plated, hard wired active infra-red sensor for automatic operation with courtesy flush button for manual operation water saver design 4.85 L (1.28 gallons) per flush with maximum 10 percent variance 25 mm (1 inch) screwdriver back check angle stop with vandal resistant cap, adjustable tailpiece, a high back pressure vacuum breaker, spud coupling for 38 mm (1 1/2 inches) top spud, wall and spud flanges, and sweat solder adapter with cover tube and set screw wall flange. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM alloy classification for semi-red brass. Seat bumpers shall be integral part of flush valve. Set centerline of inlet 292 mm (11-1/2 inches) above rim. 120V-1PH power will be located in a wiring box above the ceiling by the Electrical Contractor. A 0.75” conduit (for low voltage wiring) stubbed above the ceiling and extending down to an electrical wall box located behind each water closet will be provided by the Electrical Contractor. All transformers and all low voltage wiring shall be by the Plumbing Contractor. The Plumbing Contractor shall coordinate all work with the Electrical Contractor and the General Contractor.

2.7 URINALS

A. (P-201) Urinal (Wheelchair, Wall Hung, ANSI A112.19.2M, Figure 30) bowl with integral flush distribution, wall to front of flare 356 mm (14 inches). Wall hung with integral trap, siphon jet flushing action 1.9 L (0.5 gallon per flush) with 51 mm (2 inches) back outlet and 19 mm (3/4 inch) top inlet spud.
   1. Support urinal with chair carrier and install with rim 381 mm (17 inches) above finished floor.
   2. Flushing Device: Large chloramines resistant diaphragm, semi-red brass body, exposed flush valve, electronic sensor operated hard wired active infrared sensor for automatic operation non-hold-open, water saver design, 19 mm (3/4 inch) capped screwdriver angle stop valve. Set centerline of inlet 292 mm (11-1/2 inches) above urinal. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM alloy classification for semi-red brass. 120V-1PH power will be located in a wiring box above the ceiling by the Electrical Contractor. A 0.75” conduit (for low voltage wiring) stubbed above the ceiling and extending down to an electrical wall box located behind each water closet will be provided by the Electrical Contractor. All transformers and all low voltage wiring shall be by the Plumbing Contractor. The Plumbing Contractor shall coordinate all work with the Electrical Contractor and the General Contractor.

2.8 LAVATORIES

A. Dimensions for lavatories are specified, Length by width (distance from wall) and depth.

B. Brass components in contact with water shall contain no more than 3 percent lead content by dry weight.

C. (P-418) Lavatory (Sensor Control, Gooseneck Spout, ASME/ANSI A112.19.2M, Figure 16) straight back, approximately 508 mm by 457 mm (20 inches by 18 inches) and a 102 mm (4 inches) minimum apron, first quality vitreous china with punching for 102MM (4 inch) center set mounting. Set rim 864 mm (34 inches) above finished floor.

1. Faucet: Solid brass construction, chrome plated, elevated spout with outlet 152 mm (6 inches) above rim. Electronic sensor operated, 102 mm (4 inch) center set mounting, 120/240 volt solenoid remote mounted transformer, below deck thermostatic mixing valve provide 0.5 GPM flow control device. Breaking the light beam shall activate the water flow. Flow shall stop when user moves away from light beam. All connecting wiring between transformer, solenoid valve and sensor shall be cut to length with no excess hanging or wrapped up wiring allowed. (Note: one transformer may serve up to two lavatories and the Plumbing Contractor shall set thermostatic mixing valve to maintain 105 deg. F and remove integral faucet check valves and furnish and install individual check valves on inlets). 120V-1PH power will be located in a wiring box above the ceiling by the Electrical Contractor. A 0.75” conduit (for low voltage wiring) stubbed above the ceiling and extending down to an electrical wall box located below each lavatory will be provided by the Electrical Contractor. All transformers and all low voltage wiring shall be by the Plumbing Contractor. The Plumbing Contractor shall coordinate all work with the Electrical Contractor and the General Contractor.
2. Drain: Cast or wrought brass with flat grid strainer with offset tailpiece, brass, chrome plated and treated with inorganic antimicrobial compound with a smooth bright finish.
3. Stops: Angle “ball” type. See paragraph 2.2.Stops
4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap. Adjustable with connected elbow and 17 gage tubing extension to wall. Exposed metal trap surface and connection hardware shall be chrome plated with an inorganic antimicrobial compound with a smooth bright finish. Set trap parallel to wall.
5. Provide a one-piece, high-impact, UV-protected, pre-cut vinyl shield to cover all piping located below the vitreous china lavatory. Unit shall conform to ADA Article 4.19.4 and be provided with vandal resistant mounting hardware. Installation shall conform to all manufacturer recommendations.

D. (P-419) Lavatory (Counter Mounted by General Contractor ASME/ANSI A112.19.2M, Figure 25) solid surface countertop with integral lavatory by the General Contractor. Mount faucet in countertop.

1. Faucet: Solid cast brass construction, chrome plated, gooseneck spout with outlet 152 mm (6 inches) above rim. Electronic sensor operated, 102 mm (4 inch) center set mounting, 120/24 volt solenoid remote mounted transformer and below deck thermostatic mixing valve and provide 0.5 GPM flow control device. Breaking the light beam shall activate the water flow. Flow shall stop when user moves away from light beam. All connecting wiring between transformer, solenoid valve and sensor shall be cut to length with no excess hanging or wrapped up wiring allowed. (Note, one transformer may serve up to two lavatories and Contractor shall set thermostatic mixing valve to maintain 105 deg. F and remove integral faucet check valves and furnish and install individual check valves on inlets). 120V-1PH power will be located in a wiring box above the ceiling by the Electrical Contractor. A 0.75" conduit (for low voltage wiring) stubbed above the ceiling and extending down to an electrical wall box located below each lavatory will be provided by the Electrical Contractor. All transformers and all low voltage wiring shall be by the Plumbing Contractor. The Plumbing Contractor shall coordinate all work with the Electrical Contractor and the General Contractor.
2. Drain: Cast or wrought brass with flat grid strainer with offset tailpiece, brass, chrome plated and treated with inorganic antimicrobial compound.
3. Stops: Angle ball type. See paragraph 2.2.Stops
4. Trap: Cast copper alloy, 40 by 32 mm (1-1/2 by 1 1/4 inch) P trap. Adjustable with connected elbow and 17 gage tubing extension to wall. Exposed metal trap surface and connection hardware shall be chrome plated inorganic antimicrobial compound with a smooth bright finish. Set trap parallel to wall.
5. Millwork shield to cover all piping located below the lavatory will be by the General Contractor.

2.9 HYDRANT, HOSE BIBB AND MISCELLANEOUS DEVICES

A. (P-804) Hose Bibb (Single Faucet, Wall Mounted to Expose Supply Pipe): Cast or wrought copper alloy, single faucet with replaceable monel seat, removable replacement unit containing all parts subject to wear, mounted on wall 914 mm (36 inches) above floor to concealed supply pipe. Provide faucet with 19 mm (3/4 inch) hose coupling thread on spout and vacuum breaker. Four-arm handle on faucet shall be cast, formed or drop forged copper alloy. Escutcheons shall be either forged copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall have a bright finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fixture Setting: Opening between fixture and floor and wall finish shall be sealed as specified under Section 07 92 00, JOINT SEALANTS.

B. Supports and Fastening: Secure all fixtures, equipment and trimmings to partitions, walls and related finish surfaces. Exposed heads of bolts and nuts in finished rooms shall be hexagonal, polished chrome plated brass with rounded tops.
C. Through Bolts: For free standing marble and metal stud partitions refer to Section 10 21 13, TOILET COMPARTMENTS.
D. Toggle Bolts: For hollow masonry units, finished or unfinished.
E. Expansion Bolts: For brick or concrete or other solid masonry. Shall be 6 mm (1/4 inch) diameter bolts, and to extend at least 76 mm (3 inches) into masonry and be fitted with loose tubing or sleeves extending into masonry. Wood plugs, fiber plugs, lead or other soft metal shields are prohibited.
F. Power Set Fasteners: May be used for concrete walls, shall be 6 mm (1/4 inch) threaded studs, and shall extend at least 32 mm (1 1/4 inches) into wall.
G. Tightly cover and protect fixtures and equipment against dirt, water and chemical or mechanical injury.
H. Where water closet waste pipe has to be offset due to beam interference, provide correct and additional piping necessary to eliminate relocation of water closet.
I. Do not use aerators on lavatories and sinks.

3.2 CLEANING

A. At completion of all work, fixtures, exposed materials and equipment shall be thoroughly cleaned.

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